2006 ACCESSORIES & EQUIPMENT

Horns - Lucerne

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

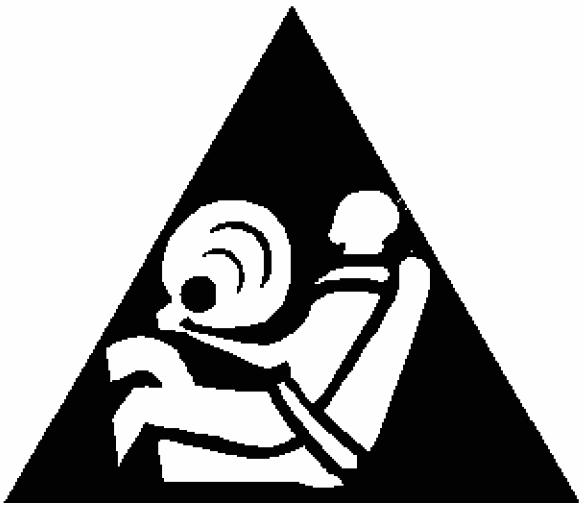
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Horn Assembly Bolt	9 N.m	80 lb in

SCHEMATIC AND ROUTING DIAGRAMS

HORN SCHEMATIC ICONS

Horn Schematic Icons

Icon	Icon Definition
	CAUTION: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.

HORN SCHEMATICS

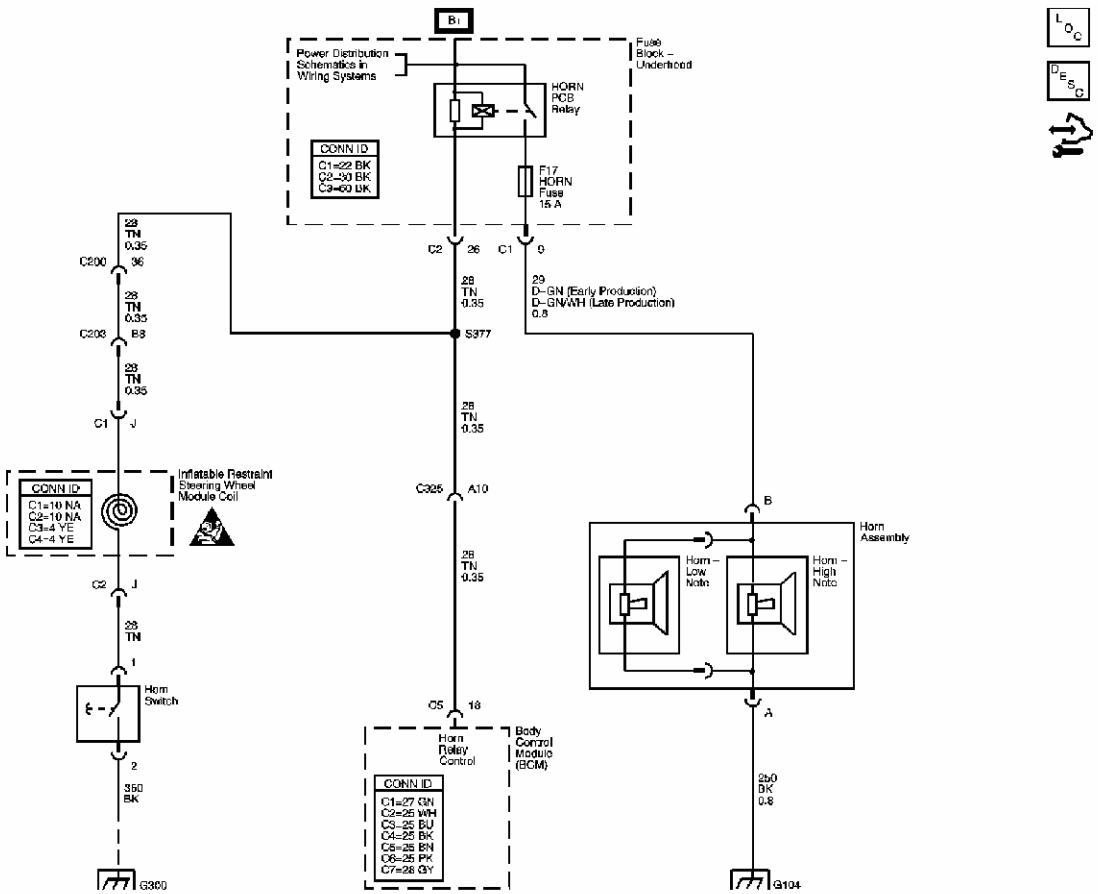


Fig. 1: Horn Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

HORN COMPONENT VIEWS

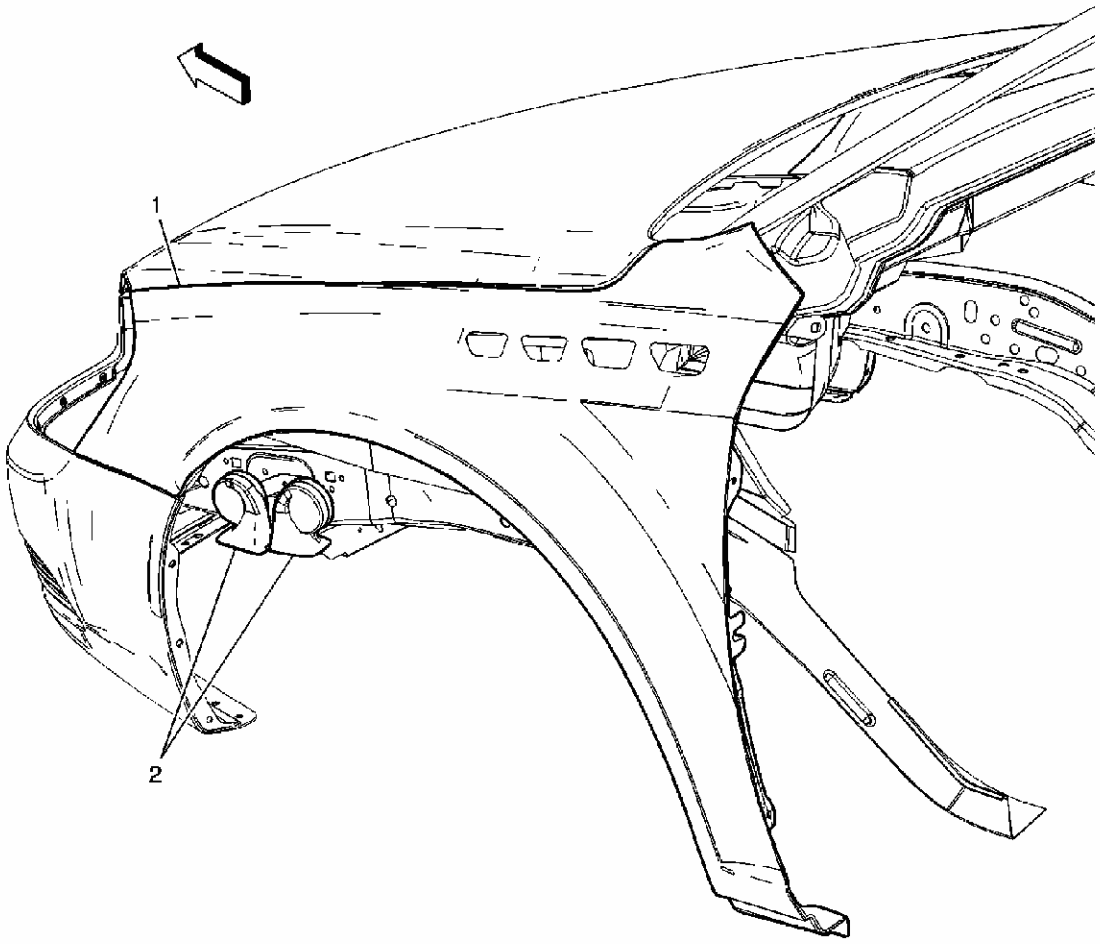


Fig. 2: View Of Left Front Of Engine Compartment
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 2

Callout	Component Name
1	Front Right Fender
2	Horn Assembly

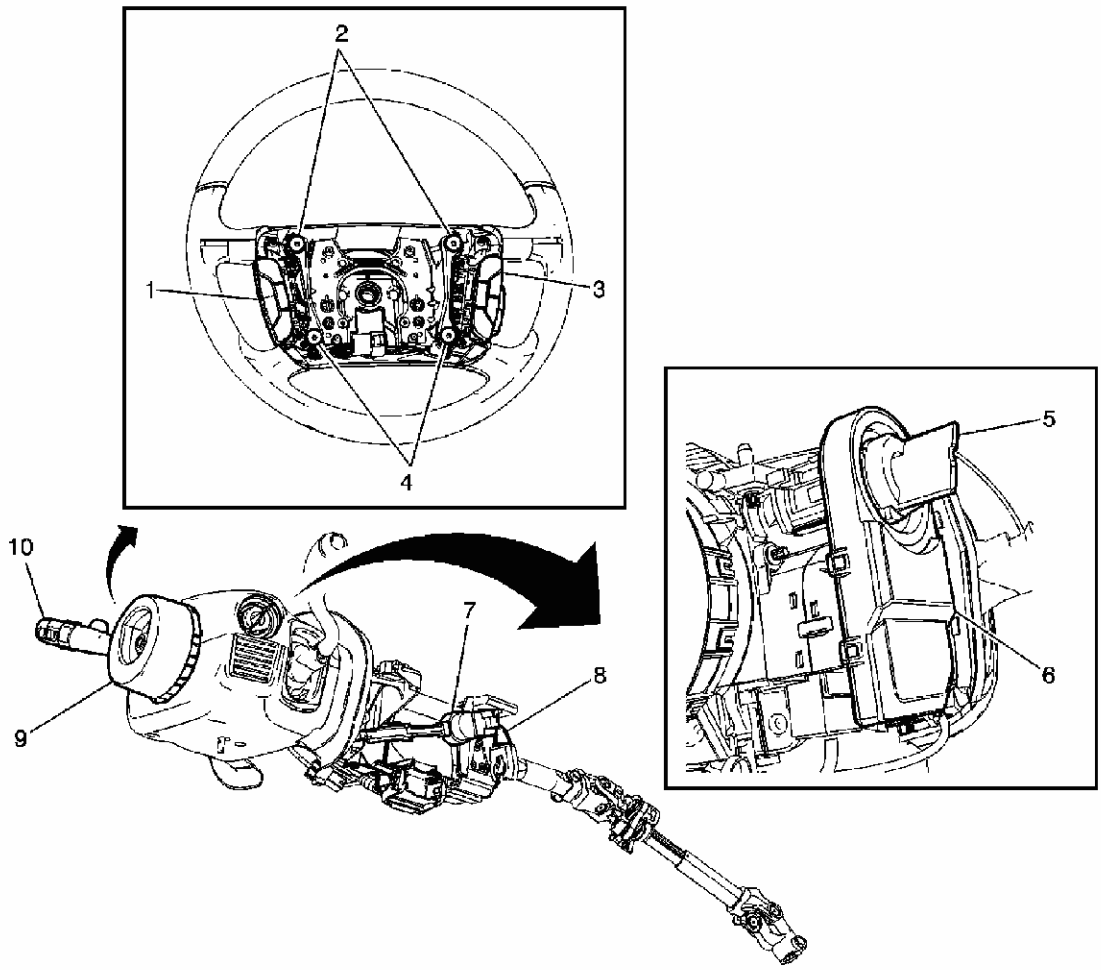


Fig. 3: Identifying Steering Column Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Steering Wheel Control Switch - Left
2	Horn Switches
3	Steering Wheel Control Switch - Right
4	Horn Switches
5	Ignition Switch
6	Theft Deterrent Module (TDM)
7	Ignition Lock Cylinder Solenoid (A51)
8	Steering Angle Sensor (JL4)
9	Inflatable Restraint Steering Wheel Module Coil
10	Turn Signal/Multifunction Switch

HORN CONNECTOR END VIEWS

Horn Assembly

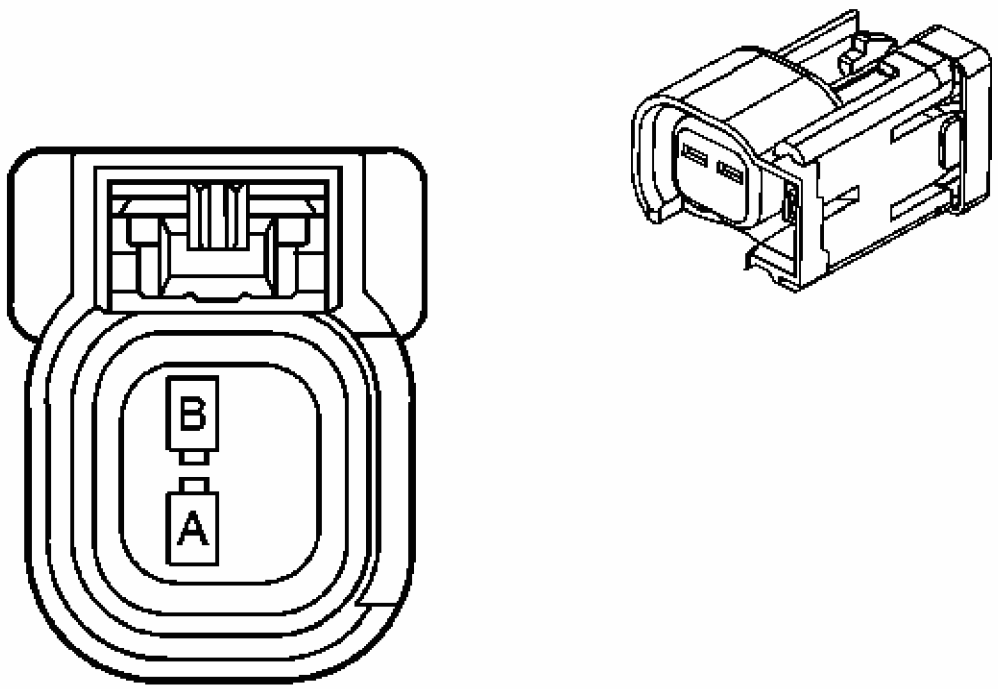


Fig. 4: Horn Assembly Connector End View
Courtesy of GENERAL MOTORS CORP.

Horn Connector End Views

Connector Part Information

- OEM: 15305086
- Service: 15306318
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12176636/19
- Core/Insulation Crimp: C/1
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Horn Assembly

Pin	Wire Color	Circuit No.	Function

Pin	Wire Color	Circuit No.	Function
B	D-GN	29	Horn Control (Early Production)
	D-GN/WH	29	Horn Control (Late Production)

Horn Switch

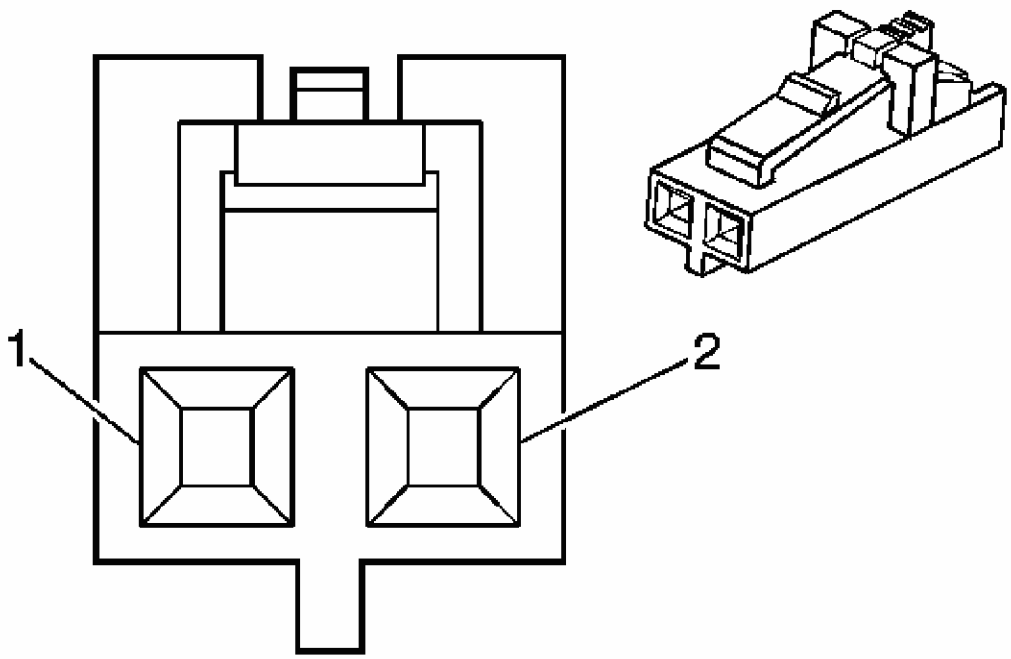


Fig. 5: Horn Switch Connector End View
Courtesy of GENERAL MOTORS CORP.

Horn Connector End Views

Connector Part Information

- OEM: 50-57-9402
- Service: See Catalog
- Description: 2-Way F C Grid/SL 70066G Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Horn Switch

Pin	Wire Color	Circuit No.	Function
1	TN	28	Horn Relay Control
2	BK	350	Ground

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - HORNS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit
- The identification of any stored diagnostic trouble codes (DTCs) and their status

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL OUTPUT CONTROLS

Body Control Module (BCM)

Scan Tool Output Control	Additional Menu Selection(s)	Description
Horn	Vehicle Control Systems/Computer/Integrating Systems/Special Functions/Body Control Module/Miscellaneous Test	Energizes the horn relay for 5 seconds

SCAN TOOL DATA LIST

The Horns Scan Tool Data List contains all of the horn related parameters that are available on the scan tool. The parameters in the list are arranged in alphabetical order. The column, Data List, indicates the location of the parameter within the scan tool menu selections. Use the Horns Scan Tool Data List as directed by a diagnostic table or in order to supplement the diagnostic procedures. Begin all of the diagnostic procedures with **Diagnostic System Check - Vehicle** .

Use the Scan Tool Data List only after the following is determined:

- There is no published DTC procedure nor published symptom procedure for the customer concern.
- The DTC or symptom diagnostic procedure indicated by the diagnostic system check

does not resolve the customer concern.

The Typical Data Values are obtained from a properly operating vehicle under the conditions specified in the first row of the Scan Tool Data List table. Comparison of the parameter values from the suspect vehicle with the Typical Data Values may reveal the source of the customer concern.

Body Control Module (BCM)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF			
Horn Relay Command	Outputs	On/Off	Off

SCAN TOOL DATA DEFINITIONS

Horn Relay Command

The scan tool displays Off/On. When the body control module (BCM) commands the horn relay On, the scan tool displays the commanded state for the relay.

DTC B2750

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B2750 00

Horn Relay Coil Circuit Shorted to Battery

Diagnostic Fault Information

DTC B2750

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horn Relay Control	1	2	B2750 00	-
Horn Control	2	2	1	-
Horn Ground	-	2	-	-
Horn Switch Ground	-	2	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performanc
1. Horns Always ON 2. Horns Inoperative	1	2	P2750.00	

Circuit/System Description

The body control module (BCM) controls the horn relay by grounding the control circuit of the horn relay coil energizing the relay. When the horn relay is energized, the horn relay contacts close applying voltage through the horn fuse and the horn control circuit to the horns.

Conditions for Running the DTC

This DTC can set only when the output is actively being requested by the BCM.

Conditions for Setting the DTC

The BCM detects a short to voltage in the horn relay control circuit for approximately 125 milliseconds.

Action Taken When the DTC Sets

The BCM disables the output to the horn relay until the next ignition cycle.

Conditions for Clearing the DTC

- The DTC clears when the fault is no longer detected.
- The current DTC will become history when the request for the output is removed.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

Horn Connector End Views

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, use scan tool horn output control to command the horn relay while listening for an audible click when commanding the horn relay ON and OFF.

Circuit/System Testing

1. Ignition OFF, disconnect the C2 harness connector at the underhood fuse block.
2. Connect a test lamp between the control circuit terminal 26 and battery voltage.
3. Command the Horn ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, test or replace the body control module.
    - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, test or replace the body control module.
4. If all circuits test normal, test or replace the underhood fuse block.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for body control module replacement, setup and programming

SYMPTOMS - HORNS

IMPORTANT: The following steps must be completed before using the symptom tables:

1. Perform **Diagnostic System Check - Vehicle** before using the symptom tables in order to verify that all of the following are true:
    - There are no DTCs set.
    - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to **Horns System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the horn system. Refer to **Checking Aftermarket Accessories** .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Perform the following if a horn buzzes or has a harsh tone:
  - Inspect for debris in the joint where the horn fastens to the vehicle.
  - Test the torque of the horn mounting hardware. The horn mounting hardware should be tightened to a torque of 10 N.m (7 lb ft).

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** .

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Horns Always On**
- **Horns Inoperative**
- **Horns - Poor Tone**

HORNS ALWAYS ON

Diagnostic Fault Information

IMPORTANT: Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

Horns Always On

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horn Relay Control	1	2	B2750 00	-
Horn Control	2	2	1	-
Horn Ground	-	2	-	-
Horn Switch Ground	-	2	-	-
1. Horns Always ON 2. Horns Inoperative				

Circuit/System Description

When the horn button is pressed, ground is applied through the horn switch contacts and the horn relay control circuit to the coil side of the relay. The horn relay coil is then energized, causing the relay switch contacts to close applying voltage through the horn fuse and the horn control circuit to the horns. For theft deterrent functions, the body control module (BCM) also controls the horn relay by applying ground to the relay control circuit to the relay.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

Horn Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Remove the HORN Fuse from the underhood fuse block. The horns should turn OFF.
    - If the horns remain ON, repair the short to voltage on the horn control circuit.

IMPORTANT: The inflatable restraint steering wheel module coil and the horn switch are located under the inflatable restraint steering wheel module. To disable the SIR system refer to SIR Disabling and Enabling .

2. Ignition OFF, disconnect the C1 harness connector at the inflatable restraint steering wheel coil module.
3. Verify that a test lamp illuminates between the horn relay side of the HORN Fuse and ground.
    - If the test lamp does not illuminate, replace the horn switch.

4. Disconnect the C5 harness connector at the body control module.
5. Verify that a test lamp illuminates between the horn relay side of the HORN Fuse and ground.
    - If the test lamp turns OFF, replace the body control module.

- If the test lamp remains ON, test the horn relay control circuit for a short to ground. If all circuits test normal, test or replace the underhood fuse block.

Repair Procedures

IMPORTANT: Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- **Horn Switch Replacement**
- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for the BCM replacement, programming and setup.

HORNS INOPERATIVE

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Horns Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horn Relay Control	1	2	B2750 00	-
Horn Control	2	2	1	-
Horn Ground	-	2	-	-
Horn Switch Ground	-	2	-	-

1. Horns Always ON
2. Horns Inoperative

Circuit/System Description

When the horn button is pressed, ground is applied through the horn switch contacts and the horn relay control circuit to the coil side of the relay. The horn relay coil is then energized, causing the relay switch contacts to close applying voltage through the horn control circuit to the horns. For theft deterrent functions, the body control module (BCM) also controls the horn relay by applying ground to the relay control circuit to the relay.

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Horn Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

With a test lamp connected to ground, probe each of the test points on the HORN Fuse while activating the horns. The test lamp should illuminate at one or both of the fuse test points.

- If the test lamp does not illuminate at either test point, refer to **Horn Switch Test**.
- If the test lamp illuminates, refer to **Horn Test**.

Horn Switch Test

IMPORTANT: The inflatable restraint steering wheel module coil harness connector and the horn switch are located under the inflatable restraint steering wheel module. To disable the SIR system refer to SIR Disabling and Enabling .

1. Ignition OFF, disconnect the (C1) harness connector at the inflatable restraint steering wheel module coil.
2. Ignition ON, test for B+ between the horn relay control circuit terminal J and ground.
   - If less than B+, test the control circuit for an open/high resistance. If the circuit tests normal, test or replace the underhood fuse block.
3. Momentarily connect a 3-A fused jumper wire between the control circuit terminal J and ground. The horns should work.

- If the horns do not work, test or replace the underhood fuse block.

4. If all circuits test normal, test or replace the horn switch.

Horn Test

1. Ignition OFF, disconnect the harness connector at the horns.
2. Test for less than 1 ohm of resistance between the ground circuit terminal A and ground.
   - If greater than 1 ohm, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal B and ground.
4. Ignition ON, press and release the horn switch. The test lamp should turn ON and OFF when pressing and releasing the horn switch.
   - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance.
5. If all circuits test normal, test or replace the horns.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Horn Replacement**
- **Underhood Electrical Center or Junction Block Replacement**
- **Horn Switch Replacement**

HORNS - POOR TONE

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic procedure.
- **Diagnostic Procedure Instructions** provides and overview of each diagnostic category.

Circuit/System Description

Battery positive voltage is applied at all times to the horn relay coil and horn relay switch. Pressing the horn switch applies ground to the horn relay control circuit. The body control module (BCM) also may apply ground to the horn relay control circuit. When the horn relay control circuit is grounded, the horn relay is energized and battery positive voltage is applied to the horn via the horn control circuit. The horn will sound as long as ground is applied to the horn relay control circuit.

Diagnostic Aids

- Inspect for any debris or water in the horn assembly.
- Test the horn mounting hardware for proper torque. Refer to **Fastener Tightening Specifications**.
- Inspect for debris in the joint where the horns attach to the vehicle.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

Horn Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**
- **Scan Tool Output Controls**

Circuit/System Verification

1. Press the horn switch. The horn relay should click and the horn should sound as long as the horn switch is pressed.
2. Turn ON the ignition. With a scan tool, command the BCM Horn Output. The horn relay should click and the horn should sound while commanded ON and stop sounding when commanded OFF.

Circuit/System Testing

1. Verify the horn mounting hardware is tightened to the proper torque. Refer to **Fastener Tightening Specifications**.
    - If the mounting hardware is not tightened to the proper torque, retorque the fastener to spec.
2. Ignition OFF, disconnect the harness connector at the horn assembly.

3. Test for less than 1.0 ohm of resistance between the ground circuit terminal A and ground.
    - If greater than 1.0 ohm, test the ground circuit for a high resistance.
4. If all circuits test normal, test or replace the horn assembly.

Component Testing

Install a 15-amp fused jumper wire between the control terminal B and 12 volts. Momentarily install a jumper wire between the ground terminal A and ground. The horn should emit a clear and even tone.

- If the horn does not emit and clear and even tone, replace the horn assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Horn Replacement

REPAIR INSTRUCTIONS

HORN REPLACEMENT

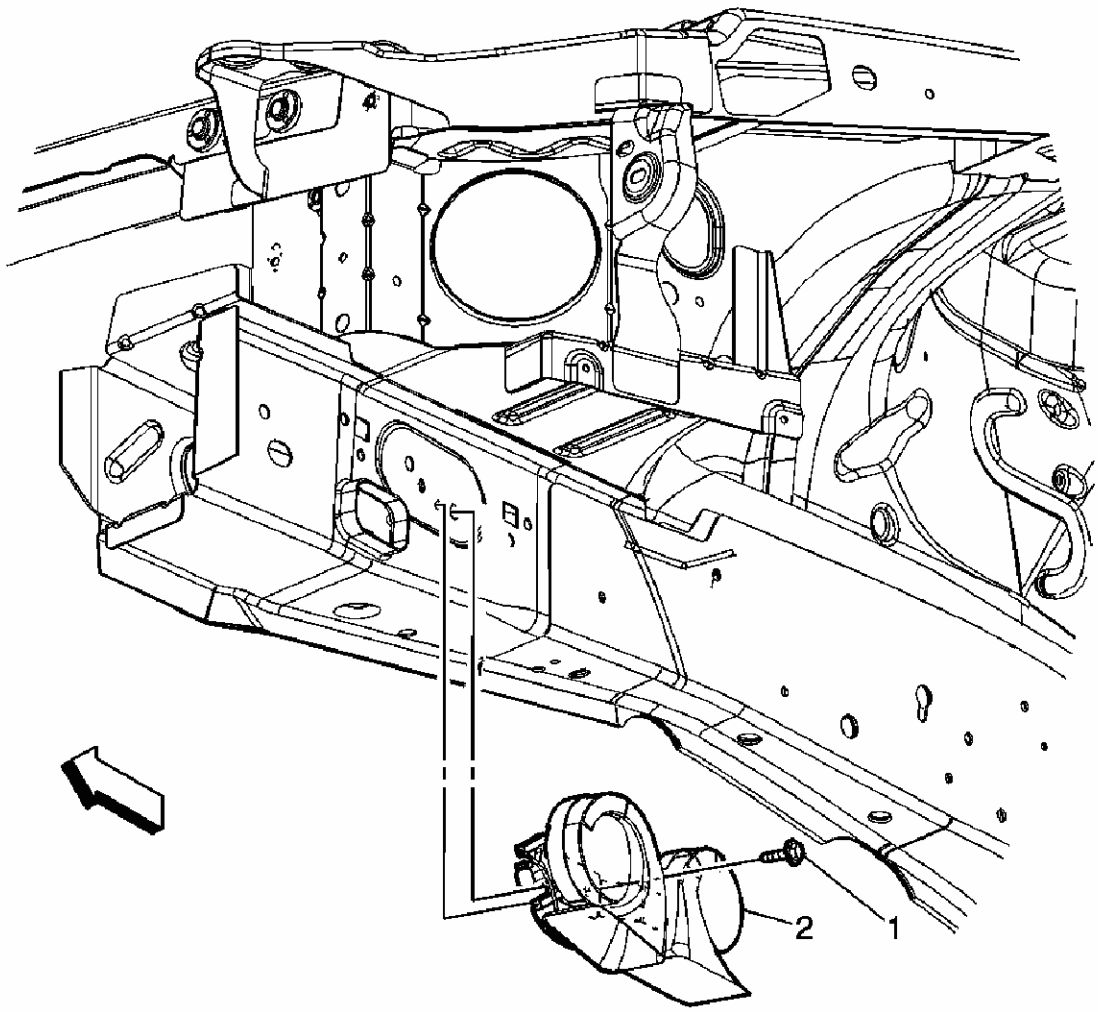

Fig. 6: Removing/Installing Horns
Courtesy of GENERAL MOTORS CORP.

Horn Replacement

Callout	Component Name
1	Horn Assembly Bolt **NOTE:** **Refer to Fastener Notice .** **Tighten:** 9 N.m (80 lb in)
2	Horn Assembly **Tip:** Disconnect the electrical connector.

DESCRIPTION AND OPERATION

HORNS SYSTEM DESCRIPTION AND OPERATION

The horn system consists of the following components:

- Horn switch (The horn switch is part of the inflatable restraint steering wheel module.)
- Horn PCB relay
- Horn assembly
- Body Control Module (BCM)
- HORN fuse 15 A

System Operation

The vehicle horn system is activated under the following conditions:

- The horn switch is depressed.
- The body control module (BCM) commands the horns on. The BCM commands the horns on under any of the following conditions:
  - When the panic button is depressed on the remote control door lock transmitter. For further information refer to **Keyless Entry System Description and Operation** .
  - When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to **Keyless Entry System Description and Operation** .

Circuit Description

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing the horn switch applies ground through the switch contacts and the horn relay control circuit to the coil side of the relay, energizing the relay. Battery voltage is then applied through the switch side of the relay, the horn fuse and the horn control circuit to the horns. The BCM may also apply ground to the horn relay control circuit as described above. The horns will sound as long as ground is applied to the horn relay control circuit.

2006 Buick Lucerne CXS

2006 ACCESSORIES & EQUIPMENT Horns - Lucerne